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S. H. McCrory, Chief

EXTENSION WORK IN RURAL ELECTRIFICATION

by

S. P. Lyle

Senior Extension Agricultural Engineer

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Sr. Extension Agr. Engr.

Rural Electrification has been conducted as an organized research project with technically trained personnel under the direction of the Committee on the Relation of Electricity to Agriculture since 1923. It was necessary that this research work should precede the extension work, since extension recommendations must be based on proven practices which will assure satisfaction. It was natural, however, that soon after inception of the research work, phases of extension work should develop in close connection with the research work, as rapidly as experimental practices were proven satisfactory in their rural applications. Thus we have had in rural electrical development a repetition of the history of other agricultural educational progress in the United States which is recorded historically in the sequence of legislative enactments establishing first the Land Grant Colleges, next the Experiment Stations, and finally the Cooperative Extension Work to establish the improved practices advocated. It is logical also that as text material has become available that study of rural electrification should be assigned a place in vocational agricultural curricula.

In order to obtain a measure of this progress in rural electrical development, a cursory survey of the national scope of extension activities for the promotion of rural electrification was made in April of this year (1931) by the Division of Agricultural Engineering of the U. S. Department of Agriculture. The following results were reported:

Nine states have cooperative extension projects established. These states are, California, Maryland, Michigan, Missouri, New Jersey, New York, Pennsylvania, Virginia and Wisconsin. Four states, Connecticut, Massachusetts, Oregon and Utah have proposed to inaugerate cooperative extension projects this year. The one in Utah is to be an exclusively home economics project on "The Selection, Care and Repair of Electrical Equipment in the Rural Home." Five states, Idaho, Indiana, New Hampshire, Oklahoma and Ohio, conduct extension field work as a part-time activity of research engineers engaged in rural electrification. In Missouri the research engineer cooperates with the extension engineer on the extension project. Altogether there are now a total of eighteen states in the above classification; fourteen actively engaged in extension programs; and four planning to assign personnel to rural electrification projects during the next year.

In addition to these eighteen there is a group of twenty-two states in which some active extension work relating to rural electrification is in progress. In some of these the extension agricultural engineer or the extension home economist or both treat the rural electrification work as a phase of a home improvement project. This educational work is supple-

mented by the use of state bulletins which have been prepared principally by research workers of the organization established by the Committee on the Relation of Electricity to Agriculture, and some by other research engineers. In some of these states rural electrification meetings and short courses are held in which the teaching staff may aid the research or extension engineers. News and technical articles and radio addresses are also prepared and delivered on rural electrification topics by college faculty members in teaching and research, as well as extension. In a few of these states, due to local demand, a few county agents have made rural electrification a part of their county programs, where the only technical aid available from within the states was from commercial sources. In most of these twenty-two states agricultural engineers, rural service men, and home service women have been employed by power companies to aid their rural customers in obtaining the greatest benefit from their investments in electrical equipment and energy.

In a continually increasing number of states, extension work in rural electrification is being sponsored by ~~the~~ state Committees on the Relation of Electricity to Agriculture, or through the organization of county committees of the Farm Bureau organization.

Altogether, appreciable extension activity in rural electrification is manifest in forty states of the Union, and among the remaining eight states favorable commercial activity is known to exist in several, concerning which no report was received in the survey.

From the extension workers' viewpoint this widespread activity is warranted and should be encouraged. The situation, simply stated is this: The benefits of electrical service for farm and home use are now very generally proven and recognized; the farmers desire the electrical service and the power companies are ready to occupy the rural territory and render the service; research work has progressed sufficiently to furnish a basis for the recommendation of practices which will assure satisfaction; the extension service as a public educational agency is now in a position to formulate these recommendations and to educate present and potential rural electric customers. The rural population is entitled to this aid which the extension workers can render.

Let us consider Rural Electrification as an extension project. Every extension project has three essential elements: first, a real vital problem must exist; next, a solution must be provided which solves the problem in the existing situation; and lastly, a method must be used which will cause the adoption of this solution to become common practice. If these elements are sound in a project, the results may be measured by the extent to which those who can adopt the recommended practices actually do so, and also by the degree of satisfaction evident among the users.

Let us now consider each of these three essential elements of a rural electrification extension project separately, beginning with the problem. The first question is, does the problem exist? It is unnecessary to discuss the question before this Rural Electric Division of the A.S.A.E. of the national existence of the rural electrification problem, but every state extension office must analyze its state situation in order to justify activity in rural electric extension work.

The problem is based on a human want and the availability of an agency for satisfaction of the want. The want is for a fuller life. The electric power companies command an agency which will tend to satisfy this want in rural homes. The importance of the problem is indicated, first, by the presence of farms and farm homes using electricity from both high line service and from unit lighting plants. How many users of each kind are there in the state? Are they getting the most out of their investments? How many farms located on high lines have no service connection? How many other farmers are potential high line customers or unit plant users? But what is the nature of the rural electric problem? Principally, dissatisfaction among the farmers using electricity, from the four following interrelated causes which are hindering the fullest realization of the benefits to be expected from rural electrification. The first, farmers do not use enough electrical energy to enjoy the benefit of the lower rates, or do not use it for income-producing purposes. The second, increases in the use of electrical energy are hindered because the service entrance switch is less than 100 amperes capacity and the distributing circuit on the premises is less than 3 wires of No. 4 gauge, operating at 220 volts. The transformer question is, of course, intimately related, but does not constitute as great a barrier to expansion if the transformer is the property of the power company. The third, increases in electrical energy are hindered because the farm and house wiring has not been designed and installed with a view to expansion in uses of electrical energy. Minimum rather than maximum uses have been the criteria in the specifications for wiring outlets and switches. This false economy is seldom the fault of the farmer; he has probably used good judgment, considering the information which has reached him, and he naturally feels disgruntled if he finds he must rewire his premises in order to use desirable equipment. The fourth, electrical equipment is considered high priced or is unsuited to the farm applications; or existing farm equipment must be altered in construction for the use of electrical power; or a change of the farm management organization must accompany the installation of electrical equipment to be used in the farm business.

The rural electric state extension problems as described above cannot be solved on a state-wide basis, The solution must fit the situation, and the situation will vary in different sections of a state, in different counties, in different power company territories, on different rural lines, and on the individual farms. But, you will say, that appears to

involve personal service, and an extension program could never serve a state satisfactorily on that basis. We are agreed upon that point, but a certain amount of personal contact is necessary in both the studying of the problem and in the procedure followed to bring into common usage the improved practices.

This contact is needed in order that the problem shall be understood from the farmer's viewpoint. A common statement among agricultural scientists is that the farmer needs this or that, equipment, practice, crop, etc., and the extension answer is "You think he needs it." In order to understand his needs we must study the problem on his premises and from his viewpoint. The whole program of research of the Committee on the Relation of Electricity to Agriculture has been based on this assumption that such understanding is needed. I am simply stating here that the same principle applies to the extension phase of the work. Diagnosis must precede prescription, regardless of the high quality of available remedies. I therefore point out that the analysis of a county problem or a community electric line problem should be based on contact study and should contain more details of the situation than are suggested by the four general statements listed above as characteristic of a state problem.

At this point it is necessary to answer a query, which you probably have in mind, namely, "Why are not questions pertaining to rates, rules and regulations for service, merchandising methods, and other similar matters included in this statement of the problem since, unquestionably, they are important factors in the rural electric problem?" The answer is that the extension agricultural engineer's solution is not related directly to these factors. The engineering specialist is employed because of his engineering qualifications, which fit him to make the specific engineering recommendations which will solve the part of the problem relating to the utilization of the electrical energy. His solution should be in the form of definite and easily understood engineering specifications.

Since we cannot ignore these other influences on the engineering phases of the problem, let us give their treatment brief consideration. They fall in two classes - those which are not readily alterable and those in which favorable changes may be brought about. No extension engineering problem exists in a territory where a power company is not ready for rural expansion, or where the rural population is either permanently or even temporarily unable to invest in rural electric development at the prevailing cost. On the other hand, an engineering extension problem is very likely to be accompanied by problems relating to rates and policies, in which desirable changes seem possible. These questions should receive the same treatment by the extension worker as is customary with questions involving other fields of subject matter or research problems which are encountered in extension work. Refer the question to the responsible agency in friendly conference. This principle has been a policy of the Committee on the Relation of Electricity to Agriculture since its inception and has been largely responsible for the advancement of rural electrification. It is recognized as essential in extension work, and will serve to delineate the scope of the engineering solution for the rural electrification problem.

We have observed that the extension agricultural engineer has been selected, as all extension specialists are, for technical qualifications. It is his responsibility to state the correct engineering practices appertaining to the agriculture of his state, in definite specifications. Vague recommendations, that leave the burden of decisions concerning strictly technical questions to the judgment of farmers, do not serve the need. Extension agricultural engineers do make specific recommendations for land improvement, terracing, irrigation and drainage; for the selection, duty and use of farm power and machinery; and for farm buildings, building plans, bills of material specifications, and even cost estimates are issued.

We are now faced with the responsibility of supplying specifications and perhaps typical wiring plans and details for rural electric installations. These electric installation specifications constitute the extension engineer's solution of his problem. His purpose, stated concisely, is to recommend an installation which will handle all the equipment he advocates for farm use on the type of farm concerned, and then to teach the use of this equipment in a manner that assures satisfaction. The farmer cannot be expected to anticipate all of the equipment, outlets, and energy which will be needed on the farm within a period of two, five, ten, or fifteen years, hence it becomes the extension engineer's responsibility to establish specifications which will assure satisfaction during this period of normal or even unusual increase in equipment, which will surely result on most farms. Viewed from this angle, there is little need for personal service. The specifications for all farm homes should contemplate in common certain lights, switches and outlets for each class of room, and the use of range, refrigerator, ironer, water heater and common appliances. Wiring plans and specifications should be provided for residence designs, other typical farm buildings, and farmstead arrangements. Most important of all, a uniform specification for entrance switches and lines should be provided, which will assure all users safety, adequate capacity, and service, over a long period of years. All of these factors must be definitely stated as specifications in the solution. This type of solution, based on standard electrical engineering practice, and C.R.E.A. researches, offers the greatest assurance of enduring satisfaction.

Having examined the rural electric problem, and having decided on an engineering solution, how shall we induce the farmers to adopt it for their own good? That is our extension problem. It involves more than educational effort. Indeed, acceptance of the practice depends chiefly on sales effort. The nature of this sales problem is this, a large number of farm families who can afford improvements in their living conditions desire more leisure, pleasure, entertainment, comfort, more healthful and beautiful home conditions, relief from drudgery, and increased incomes. They see their city cousins enjoying all the modern improvements and know that most of these may be obtained from the use of electricity. They do not care for rural electrification as such, they no doubt would prefer, as we, ourselves would - wireless and without cost. Since a cost is involved they cannot readily choose to satisfy these desires. They must also consider some alternative investments involving perhaps such strong appeals

as the health or education of members of the family. As extension workers, with our chief objective the introduction of improved practices which bring lasting satisfaction, we do not wish to "over sell" any one. We must present our educational aid in a way that merits the confidence of the farmer.

The sales effort desired is really educational in character, We wish to satisfy the farmer's want for home and farm improvements. His attention is on rural electrification as a means of satisfying this want. He is interested in its probable benefits and costs. He may desire a rural line connection or a unit electric plant, or as a matter of community welfare it may be necessary to arouse his desire to obtain an electric line extension or a unit light plant for a school or community house. But attention, interest and desire are not sufficient to cause him to adopt a practice which involves an important investment. He must also have confidence in the practice. He must be brought up to this stage by educational sales methods, but at this point where confidence is to be established, he is seeking reliable information. He turns to his extension office, either state or county, as an unbiased source of reliable advice. The extension office gives him easily understood and definite recommendations for action. This is no time for evasive answers, or reference to need for personal service, or statements of "it depends." The man is ready to act. The extension worker is not forcing a sale, but is rendering the aid expected from a state extension service. The extension specifications and recommended practices are the solution to the farmer's problem. He acts upon these recommendations, prepared with an understanding of his viewpoint, and adapted to the local situation. Satisfaction results.

The procedure for carrying on this extension work differs in the various states, having rural electric extension projects, due to differances in the state problems. These differences are at present greater than is usual between engineering projects, due to artificial influences such as state regulation, commercial rules and aid, extension policies, and political uncertainties. For most state situations, however, a County Plan of Work outlined for a period of three to five years duration offers the most effectual service to the farmers.

The County Plan of Work provides for a program planned by the state extension agricultural engineer and the state home economist, to be conducted cooperatively by the agricultural agent and the home demonstration agent of any county adopting it as a project. It is based on a careful analysis of the local situation from the farm and home viewpoint, and the provision of a technical engineering solution to solve the problem in the local situation. The extension program is based on organized local leadership. It bears an attractive title such as "Get the Most From Your Electricity." All of the extension agencies such as conferences, news items, letters, meetings, surveys, exhibits, slides, reels, radio, slogans, posters, schools, tours, method and result demonstrations and others, are used in a planned calendar of activities to lead the county group as a whole through the sales sequence of attention, interest, desire, confidence, learning the practice, action and satisfaction, during the first year, with

related activities in following years. This method is not new in extension work. Its use is indicated in a rural electrification project, because it can develop the group action needed and also provides for group treatment of personal service problems. Perhaps the best reason for urging this plan of extension work is the same which accounts for its wide success on other types of projects on which it has been used, namely, that it provides for a proper emphasis on "selling" before the teaching is begun, in order that all who can benefit from an improved practice may not miss the opportunity for instruction in it.